

APPENDIX A - SECTION 404(B) EVALUATION

SECTION 404(b) EVALUATION
MAINTENANCE DREDGING
PORT EVERGLADES ENTRANCE CHANNEL
BROWARD COUNTY, FLORIDA

I. Project Description

a. Location. The proposed work will be performed at Port Everglades, Broward County, Florida.

b. General Description. The proposed plan calls for the maintenance dredging of the port Everglades entrance channel. Dredged material will be taken either to the John U. Lloyd Beach State Park to the south of the port for use as beach sediments for the Broward County Shore Protection Project.

c. Authority and Purpose. Maintenance dredging of Port Everglades Entrance Channel was initially authorized under House Document 357/71/2 (July 1930), as well as subsequent authorization associated with Port Expansion activities in 1935, 1938, 1946, 1958, 1974 and 1990. A Comprehensive list of these authorizations can be found at the District's Digital Project Notebook homepage (http://www.saj.usace.army.mil/digitalproject/dpn/sajn_020.htm). The purpose of the project is to maintain safe navigation conditions.

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. The physical structure of the sediments from the Entrance Channel indicates that the composition is primarily beach quality sand. Examination of the sediments from the inner channel indicates that the composition is comprised primarily of fine quartz based sand; therefore it meets the criteria for beach placement because it contains less than 10% silt and clay materials.

(2) Quantity of Material. Approximately 100,000 cubic yards of sand will be removed from the harbor's entrance channel.

(3) Source of Material. The Entrance Channel is authorized to a depth of 45ft + 2 additional feet of overdepth. Based on the 2002-channel survey conducted by the Jacksonville District, the shoal is 600 feet in length and approximately 120 feet in width at its widest point and approximately 100,000 cubic yards.

e. Description of the proposed Discharge Site.

(1) Location. The John U Lloyd Beach State Park is located immediately south of the Port Everglades Entrance Channel's south Jetty.

(2) Size. John U. Lloyd Beach State Park is 251 acres of barrier island between the Atlantic Ocean and the Intracoastal Waterway, from Port Everglades on the north to Dania on the south.

(3) Type of Site. The John U. Lloyd Beach State Park is a State Park barrier island beach. It has nearshore hard-bottoms and offshore hardbottoms associated with the beach. The beach disposal area is open, sandy beach.

(4) Type of Habitat. As stated above, see Section 3 of the Environmental Assessment for more detail.

(5) Timing and Duration of Discharge. The schedule for dredging is dependant on Broward County modifying their Department of the Army and State Department of Environmental Protection permits. There are time limits that will be placed on dredging of the site and beach placement due to sea turtle nesting on John U. Lloyd Beach State Park beaches.

f. Description of Disposal Method. Disposal could be either from a pipeline or hopper dredge. Sand placed on the beach will be graded out with front-end loaders and bulldozers.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. Gentle sloped beach and littoral zone.

(2) Sediment Type. The sediment from the project channel contains fine quartz sand with less than 10% silt and clay materials.

(3) Dredge/Fill Material Movement. Material placed at the John U. Lloyd State Park beach placement area is subject to erosion by waves with net movement of fill material to the south.

(4) Physical Effects on Benthos. The placement of sand on the beach will result in the burial and subsequent loss of most of the beach infauna. Small, short-lived organisms with high reproductive potential generally populate sandy beaches. Beach and surf zone infaunal populations should recover to pre-nourishment levels within one year after completion of nourishment.

b. Water Circulation, Fluctuation and Salinity Determination.

(1) Water Column Effects. Placement of fill material at the JUL beach placement site will cause a temporary increase in turbidity. Because the immediate nearshore area is subject to naturally occurring elevated turbidity levels caused by the surf, increases due to the project will not be significant. Fill placement will not have long-term or significant impacts, if any, on salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients or eutrophication

(2) Current Patterns and Circulation. Currents in the project area are both tidal and longshore. Net movement of water due to the longshore current is from the north to the south. Dredging of the Entrance Channel and beach placement will not affect the current patterns and circulation.

(3) Normal Water Level Fluctuations and Salinity Gradients. Tides in the project area are semi-diurnal. Elevations of mean high water and mean low water tidal datum in Broward County were reported to be +1.64 feet (NGVD) and -0.89 feet (NGVD) (USACE, 1994). Dredging and disposal operations will not affect normal tide fluctuations or salinity.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. There will be a temporary increase in turbidity levels in the project area during placement. Turbidity will be short-term and localized and no significant adverse impacts are expected. State standards for turbidity should not be exceeded.

(2) Effects on the Chemical and Physical Properties of the Water Column.

a. Light Penetration. The placement of fill on the beach will increase turbidity in the nearshore area during construction. Because the immediate nearshore area is a high wave energy system and subject to naturally occurring elevated turbidity and sediment, increases due to project construction should not be significant. A nearshore turbidity-monitoring program with a plume-mixing zone of 150 meters from the discharge site will be implemented during construction. Turbidity and sedimentation at the sand borrow site in the Entrance Channel is likely due to the filling/washing of the material on the hopper dredge. Turbidity will be monitored during construction, and State standards for turbidity should not be exceeded. Light penetration will decrease during discharge in the immediate area where sand is being deposited on the beach. This effect will be short-term and have limited adverse impacts on the nearshore environment during construction activities. A long-term nearshore-monitoring program will be implemented to assess the potential secondary impacts of sedimentation and turbidity to

nearshore hardbottom communities adjacent to the equilibrium toe of fill.

- b. Dissolved Oxygen. Dissolved oxygen levels will not be altered by this project.
- c. Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens will be disturbed or released at levels that exceed state standards.
- d. Aesthetics. Aesthetic quality will be reduced during that period when work is occurring. There will be a long-term increase in aesthetic quality of the beach once the work is completed.

(3) Effects on Biota.

- a. Primary Productivity and Photosynthesis. A temporary increased level of suspended particles will occur in the surf zone during construction. However, since primary productivity is not a recognized significant phenomenon in the surf zone, there will be limited effects on nearshore productivity as a result of the proposed beach placement.
- b. Suspension/Filter Feeders. There will be no long-term adverse impact to suspension/filter feeders.
- c. Sight Feeders. There will be no long-term adverse impact to sight feeders.

(4) Contaminant Determinations. Deposited fill material will not introduce, relocate, or increase contaminants.

(5) Aquatic Ecosystem and Organism Determinations. The grain size characteristics and composition exhibited by the proposed fill material are similar to those of the existing beach sediments. Therefore, no sediment related impacts are expected. The proposed fill material meets the exclusion criteria; therefore, no additional chemical-biological testing will be required.

- a. Effects on Plankton. No adverse long-term impacts to planktonic organisms are anticipated.
- b. Effects on Benthos. No adverse long-term impacts to non-motile or motile Benthic invertebrates or invertebrates.
- c. Effects on Nekton. No adverse long-term impacts to nektonic species are anticipated.
- d. Effects on the Aquatic Food Web. No adverse long-term impacts to any trophic group in the food web are anticipated.
- e. Effects on Special Aquatic Sites.
 - i. Hardground and Coral Reef Communities. Beach nourishment activities within the Broward County SPP study area will cover 13.6 acres of nearshore hardbottom habitat. Approximately 2.0 acres of nearshore hardbottom will be directly buried during construction, and the remaining 11.6 acres will be gradually impacted by beach fill equilibration. Overall, the nearshore hardbottom communities do not

represent irreplaceable resources and with proper mitigation, suitable replacement habitat can be created for epibenthic and fish species. Approximately six acres of limestone boulder mitigative reef will be constructed prior to beach project construction to compensate for the temporal lag in habitat functionality.

- ii. Sanctuaries and Refuges. There are no sanctuaries or wildlife refuges located within the proposed dredge or beach placement areas.
 - iii. Wetlands. There are no wetlands located within the proposed dredge or beach placement areas.
 - iv. Mud Flats. There are no mud flats located within the proposed dredge or beach placement areas.
 - v. Vegetated Shallows. There are no known vegetated shallows (seagrasses) located within the proposed dredge or beach placement areas.
 - vi. Riffle and Pool Complexes. There are no riffle and pool complexes within the proposed dredge or beach placement areas.
- (6) Endangered and Threatened Species. There will be no significant impacts on any threatened or endangered species or on designated Critical Habitat of any threatened or endangered species. Sea turtle nesting may occur in the project area during the time that dredging and beach disposal takes place. If construction occurs during the nesting season, a nest relocation program will be implemented as recommended by the USFWS. Manatee protection measures as specified by the USFWS will be followed to minimize the potential for harm. See Sections 3 and 4 of the Environmental Assessment.
- (7) Other Wildlife. No adverse impacts to small foraging mammals, reptiles, wading birds, or wildlife in general are expected.
- (8) Actions to Minimize Impacts. All practical safeguards will be taken during construction to preserve and enhance environmental, aesthetic, recreational, and economic values in the project area. Specific precautions that will be implemented in conjunction with the proposed project are discussed elsewhere in this 404(b) evaluation and in the Draft Environmental Impact Statement for the project. See Section 4 of the Environmental Assessment.

f. Proposed Disposal Site Determinations.

- (1) Mixing Zone Determination. During the placement operations, there will be temporary elevated levels of turbidity in the surrounding waters.
- (2) Determination of Compliance with Applicable Water Quality Standards. The work will be conducted in accordance with the state of Florida Joint Coastal and the Department of the Army permits issued to the County issued for this project.

(3) Potential Effects on Human Use Characteristics.

- a. Municipal and Private Water Supplies. No effects are anticipated.
- b. Recreational and Commercial Fisheries. Impacts caused by dredging and placement activities will be minor and short-term.
- c. Water Related Recreation. Construction activities will temporarily disrupt recreational opportunities. Dredging will maintain the navigational capacity of the project channel for recreational boaters. Placement of dredged material on the beach will preserve and enhance recreational beach activities.
- d. Aesthetics. Construction will temporarily adversely impact the aesthetics of the area. Placement of dredged sand on the beach will compensate for losses caused by erosion and improve the aesthetics of the beach environment.
- e. Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. The 1.5-mile section of beach between R-86 and R-94 at John U. Lloyd Beach State Park has already been restored through nourishment with a periodic renourishment interval of 6 years. Biological monitoring of the J. U. Lloyd Beach Renourishment of 1989 revealed that although major faunal shifts occurred in the softbottom communities within the toe of fill site of the beach nourishment area, no pattern of hardground organism abundance relative to dredge or fill activities was observed (Dodge et al., 1991). Coordination with the Ranger of the John U. Lloyd Beach State Park revealed that beach nourishment was needed to combat erosion near the parking areas (Leve, 1995).

Approximately 0.9 acres of low-profile hardbottom dominated by macroalgae and blue-green algae will be directly buried at the time of construction in John U. Lloyd Beach State Park. This habitat exhibits a high level of nutrification, evidenced by the extensive coverage of macroalgae and blue-green algae and depauperate faunal communities. Anthropogenic influences upon this habitat are likely the result of Port Everglades Inlet output of nutrient and freshwater flow, creating turbidity and sudden temperature and salinity fluctuations. Given the natural and anthropogenic influences upon this habitat, alternative replacement habitat can be created which provides higher faunal utilization. Therefore, no adverse impacts to irreplaceable hardbottom biological resources are expected. The proposed Broward County Shore Protection Project Determination of Cumulative Effects on the Aquatic Ecosystem would directly or indirectly impact no other State Park or aquatic preserves.

Cumulative effects that will adversely impact the aquatic ecosystem as a result of dredging and placement activities are not anticipate

- f. Determination of Secondary Effects on the Aquatic Ecosystem. There will be no significant cumulative impacts that result in a major impairment of water quality of the existing aquatic ecosystem as a result of placement of fill at the project site. If determined feasible, sand-bypassing activities at Port Everglades would create ongoing, local turbidity in the vicinity of the port. This habitat is subjected to apparent Port Everglades Inlet related influences of nutrient and freshwater output and is dominated by macroalgal/blue-green algae communities with low faunal utilization. The impacts of disposing material on the beach during these dredging cycles would be minor. Sand-bypassing at Port Everglades could potentially eliminate the need for larger scale renourishment projects on the beaches downdrift of the port, thereby avoiding impacts associated with these projects. Secondary effects that will adversely impact the aquatic ecosystem as a result of dredging and placement activities are not anticipated.

III. Findings of Compliance or Non-compliance with the Restrictions on Discharge.

- a. No significant adaptations of the guidelines were made relative to this evaluation.

- b. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.

- c. After consideration of disposal site dilution and dispersion, the discharge of fill materials will not cause or contribute to, violations of any applicable state water quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

- d. The maintenance dredging of the port Everglades entrance channel will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

- e. The placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

- f. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines.